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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,797	02/05/2004	Felice DiMascio	HAT-0020-P	8450

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EXAMINER	
WILKINS III, HARRY D	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
05/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/773,797	DIMASCIO, FELICE	
	Examiner	Art Unit	
	Harry D. Wilkins, III	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *1-26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1 April 2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 27-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imrie et al (GB 2,263,108) in view of Lipsztajn et al (US 6,203,688) with reference to Kaczur et al (US 5,106,465, incorporated by reference into Lipsztajn et al) and Buchan (US 6,413,416).

Imrie et al. discloses an apparatus for generating chlorine dioxide comprising:

-a vessel comprising a housing (i.e., a vessel such as a tower; see page 2, last paragraph), inherently comprising an inlet and an outlet (i.e., the vessel is provided with means to allow the flow therethrough of an aqueous medium; see page 2, last paragraph) and

-a solid phase chlorine containing material is disposed within the housing (i.e., an active halogen source comprising a source of chlorine, in the form of tablets that are packed into the vessel or tower; see page 2, paragraphs 3-6 and last paragraph) to form a dissolved chlorine-containing material within the vessel.

The apparatus generates chlorine dioxide by passing an aqueous solution of a metal chlorite, such as sodium chlorite, through the vessel containing the solid phase chlorine containing material (see page 1, last paragraph; see also page 3, paragraphs 1-3).

In addition, Imrie et al. discloses that the reaction preferably occurs under acid-to-neutral conditions (see page 3, fourth paragraph).

Imrie et al., however, is silent as to the apparatus comprising the instantly claimed means for supplying water and a chlorite ion to the vessel (i.e., for forming the aqueous solution of a metal chlorite), and the instantly claimed means for supplying an acid to the vessel (i.e., for forming the acid-to-neutral reaction conditions).

Lipsztajn et al teach (see col. 3, line 18 to col. col. 5, line 43 and col. 9, lines 53-67) the electrochemical acidification of sodium chlorite solutions. Lipsztajn et al teach that commercially available sodium chlorite solutions were adjusted to be alkaline in pH to prevent decomposition into chlorine dioxide, and thus, needed to be acidified to achieve a neutral/acidic pH. Lipsztajn et al teach using a three-compartment electrolytic cell, such as that disclosed by Kaczur et al, for the production of the acidified sodium chlorite soluition. The three-compartment cell was arranged as shown in figure 2 of Lipsztajn et al, and included water feeds to the anode and cathode compartments and

the sodium chlorite solution being fed to the central compartment. Although Lipsztajn et al fail to teach cation exchange resins being disposed in the central compartment, Kaczur et al teach (see figure 1, col. 3, lines 38-47 and col. 5, line 66 to col 6, line 43) that cation exchange resin beads/rods/fibers can be placed within the central compartment for the purpose of reducing operating voltage when dealing with more dilute chlorite solutions.

In view of the teachings of both Imrie et al and Lipsztajn et al, the feed stream to the vessel of Imrie et al would have been an acidified metal chlorite solution, which would inherently contain at least some chlorous acid, because the standard metal chlorite solution would have had an alkaline (basic) pH. In order to have the reaction of Imrie et al occur at acid-to-neutral conditions, the basic metal chlorite solution would have needed to be acidified.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized the structure shown by the Lipsztajn et al for production of the acidified chlorite solution required by Imrie et al because the electrochemical acidification cell of Lipsztajn et al was able to achieve good results in acidifying sodium chlorite solutions. The produced acidified sodium chlorite solution would have included at least some chlorous acid, which would have been fed from the electrochemical acidification cell to the vessel of Imrie et al by means of a conduit.

Thus, Imrie et al fail to teach that the vessel included a cartridge having a lower portion with openings in fluid communication with the water (inside the vessel).

Buchan teach (see abstract and figures 1-5) a water treatment vessel for dissolving tablets of material into water, wherein the tablets are stored within a cartridge. The apparatus achieves balancing of inflow and outflow of water and prevents overflow or a drop in water level by inclusion of a float valve.

Thus, it would have been obvious to one of ordinary skill in the art to have substituted the dissolver of Buchan for the tower of Imrie et al because the dissolver of Buchan included means for making sure that the water was in constant contact with the solid phase chlorine-containing material and also means for the prevention of overflow or a drop in water level.

Regarding Applicant's amended feature that "the system is configured to combine the chlorous acid stream produced by the electrochemical acidification cell with the dissolved chlorine containing material within the vessel to produce the chlorine dioxide from the outlet", the combination of Imrie et al, Lipsztajn et al, Kaczur et al and Buchan teach that the chlorous acid stream produced by the electrochemical acidification cell is combined with a dissolved chlorine-containing material in the vessel to create chlorine dioxide. Therefore, the prior art meets the structural limitations of this claim.

Regarding claim 28, Kaczur et al teach (see col. 5, line 67 to col 6, line 6) using cation exchange resins having backbones of polystyrene based with divinylbenzene.

Regarding claim 29, Imrie et al teach (see page 2, paragraphs 4-6) using a solid phase chlorine-containing material such as sodium dichloro-isocyanurate or trichloroisocyanuric acid.

Regarding claim 30, the modified apparatus of Imrie et al. structurally meets the claims, because the particular pH level is considered a process limitation that adds no further patentable weight to the apparatus claim. In any event, it is noted that Lipsztajn et al further teaches that the pH of the solution leaving the electrochemical acidification cell was within the range of 2 to 7 (see col. 4, lines 16-23). Furthermore, the specific pH level is not considered to confer patentability to the claim since the precise pH would have been considered a result effective variable by one having ordinary skill in the art. Also, it is noted that the present specification sets forth in section [0031] that the claimed pH level, is at best, a preferred limitation. As such, without more, the claimed ratio cannot be considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the pH level of the water source in the system to obtain the desired level of chlorine dioxide generation, *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

Regarding claim 31, Buchan teaches using a float valve to control the water level within the dissolver vessel to prevent overflow and to ensure that the solid phase chlorine-containing material was always in contact with water.

Regarding claim 32, since the prior art teaches using the same material as the solid phase chlorine-containing material as is disclosed for use by the present application, the prior art is considered to inherently possess the claims solubility limit.

Regarding claim 33, it would have been within the expected skill of a routineer in the art to have optimized the amount of contact between the water and the solid phase chlorine-containing material in order to optimize the amount of chlorine dioxide produced within the vessel.

Regarding claim 34, since Imrie et al fail to teach any heating or cooling means in the apparatus, one of ordinary skill in the art would have considered the process to inherently occur at approximately room temperature (~23°C). Further, Kaczur et al teach (see col. 5, lines 14-20) that care needs to be taken to ensure that the temperature of solutions containing chlorine dioxide not reach too high a level to avoid safety issues related with chlorine dioxide vapor. Thus, one of ordinary skill in the art would have been led to keep the temperature below such limit, such as 70°C.

Regarding claim 35, it would have been within the routine skill in the art to optimize the pressure drop across the vessel to ensure adequate back pressure to force the solution through the vessel in the desired direction.

Regarding claim 36, Kaczur et al cite (see col. 6, lines 28-38) that suitable resins included Amberlyst™ 31. As noted on the cited technical data sheet, Amberlyst™ 31 is considered a catalytic ion exchange resin. Therefore, the central compartment of Kaczur et al included a catalyst.

Regarding claim 37, it would have been obvious to one of ordinary skill in the art to have ensured that adequate solid phase material were present within the vessel of Buchan to provide the desired amount of dissolved chlorine levels in the solution.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 27-37 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 23-26 and 28-47 of copending Application No. 10/683,056 in view of Buchan (US 6,413,416). The feature of a cartridge is missing from the claims of the '056 application. However, as shown above, such features were known to one of ordinary skill in the art in the dissolver of Buchan. Buchan teaches certain advantages to using the dissolver, such as maintaining a constant level of water in the dissolver.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

6. Applicant's arguments filed 1 April 2008 have been fully considered but they are not persuasive. Applicant has argued that Imrie et al and Lipsztajn et al are either not combinable or that one of ordinary skill in the art would not have had a motivation for making the combination.

In response, the overall teachings of Imrie et al and Lipsztajn et al are important. Lipsztajn et al teach a two-step process of acidifying an alkali metal chlorite feed stream in a first step, and then reacting that acidified stream in a second process step. Imrie et al teach a process step of reacting an acidified stream with dissolved-chlorine material in a vessel. Thus, there is some functional equivalency noted within the prior art between the reaction occurring in the vessel of Imrie et al and the second process step of Lipsztajn et al because both reactions start with acidified alkali metal chlorite and produce chlorine dioxide. Therefore, one of ordinary skill in the art would have found the combination of Imrie et al and Lipsztajn et al viable such that the first step of Lipsztajn et al would have been suitable for creating the acidified alkali metal chlorite solution to be fed to the vessel of Imrie et al. The motivation for doing so is that the electrochemical acidification step of Lipsztajn et al was a reliable and efficient method of acidifying an alkali metal chlorite solution stream.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

hdw